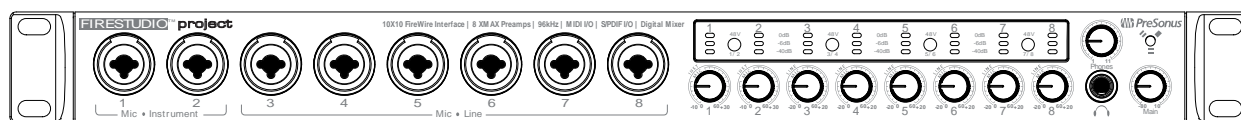


FIRESTUDIO PROJECT

24-bit/96k Recording Interface
w/ Eight Microphone Preamplifiers



User's Manual
Version 1.0



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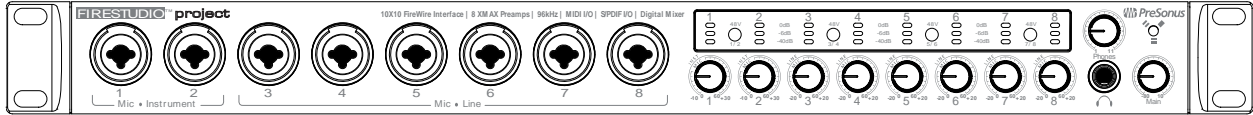
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OVERVIEW

1.1 INTRODUCTION



Thank you for purchasing the PreSonus FireStudio Project. PreSonus Audio Electronics has designed the FireStudio Project utilizing high-grade components to ensure optimum performance that will last a lifetime. Loaded with 24-bit 96K converters, eight PreSonus X-MAX microphone preamplifiers and Cubase LE 48-track music production software, the FireStudio Project is ready to go out of the box for professional quality computer recording. All you need is a computer with FireWire connection, a few microphones and cables along with your instruments and you are ready to record!

We encourage you to contact us at 225-216-7887 with any questions or comments you may have regarding your PreSonus FireStudio Project. PreSonus Audio Electronics is committed to constant product improvement, and we value your suggestions highly. We believe the best way to achieve our goal of constant product improvement is by listening to the real *experts*, our valued customers. We appreciate the support you have shown us through the purchase of this product.

We suggest you use this manual to familiarize yourself with the features, applications and correct connection procedure for your FireStudio Project before trying to connect it to your computer. This will hopefully alleviate any unforeseen issues that you may encounter during installation and set up.

Thank you, once again, for buying our product, and we hope you enjoy your FireStudio Project!

OVERVIEW

1.2 FEATURES

The FireStudio Project is a powerful and affordable computer recording system complete with everything needed for real-world recording applications. The FireStudio Project comes complete with eight high-quality PreSonus X-MAX microphone preamps, S/PDIF and MIDI I/O, rock solid drivers, expandability, as well as a plethora of music recording and production software.

The FireStudio Project includes PreSonus ProPak Software Suite with Cubase LE 4 and over 2 GB of plug-ins, drum loops and samples – giving you everything you need for professional music recording and production.

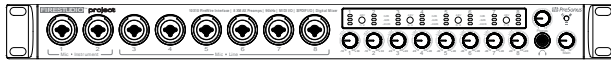
Summary of features

- High-speed FireWire (IEEE 1394)
- 24-bit / 96 kHz sampling rate
- 8 Class A X-MAX microphone preamps
- 28 simultaneous inputs and outputs (10 discrete i/o)
- Balanced send/return on channels 1 & 2
- S/PDIF I/O, MIDI I/O
- Built-in zero-latency DSP mixer
- PreSonus FireControl software
- Cubase LE 4 Music Production Software included
- PreSonus ProPak Software Suite (over 2 GB of plug-ins, loops and samples)
- OS X and Windows compatible

OVERVIEW

1.3 WHAT IS IN THE BOX

Your FireStudio Project package contains the following:



- FireStudio Project Recording Interface



- 6' 6-pin to 6-pin FireWire cable



- 6' Standard IEC Power Cable



- Software installation discs:
 - PreSonus FireStudio Project Installation Drivers
 - Cubase LE 4
 - ProPak Software Suite



- PreSonus Warranty Card

OVERVIEW

1.4 SYSTEM REQUIREMENTS

Below are the minimum computer system requirements for your FireStudio Project.

Macintosh

- OS: Mac OS X 10.4.x or later
- Computer: Apple Macintosh series with FireWire 400 port
- CPU/Clock: PowerPC G4/1 GHz or higher (Intel/Dual 1 GHz recommended)
- Memory (RAM): 512 MB (1 GB or more recommended)

Windows

- OS: 32-bit Microsoft Windows Vista or XP (with at least SP1)
- Computer: Windows compatible computer with FireWire 400 port.
- CPU/Clock: Pentium or AMD with 1 GHz or higher (Dual 1 GHz recommended)
- Memory (RAM): 512 MB (1 GB or more recommended)

NOTE: The speed of your processor, amount of RAM and size & speed of your hard drives will greatly affect the overall performance of your recording system. A more powerful system (faster processor with more RAM) allows for lower latency (signal delay) and better overall performance.

OPERATION

2.1 QUICK START UP

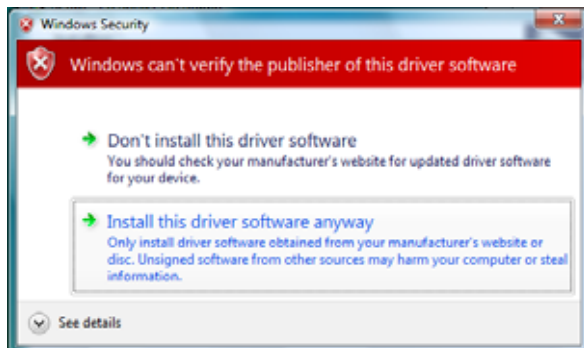
2.1.1 Installation in Microsoft Windows

After inserting the Installation CD into your CD-ROM drive, the FireStudio Project installer will take you through each step of the installation process. Please read each message carefully – ensuring especially you do not connect your FireStudio Project early.



- 1) The FireStudio Project Installer was written to be as simple and easy-to-follow as possible. Please read each message carefully to ensure the FireStudio Project is properly installed.

Before continuing the FireStudio Project Installation Setup, please close all multimedia applications and disconnect your FireStudio Project from your computer.



- 2) If you see any Windows Security alerts, click "Install this driver software anyway" (Vista) or "Continue anyway" (XP).



- 3) Before rebooting your computer, ensure the FireStudio Project is connected to your computer. If a Found New Hardware wizard appears, follow the recommended steps, then restart your computer.

After rebooting your computer, when the sync light remains solid blue, your FireStudio Project is synced to your computer and ready to use!

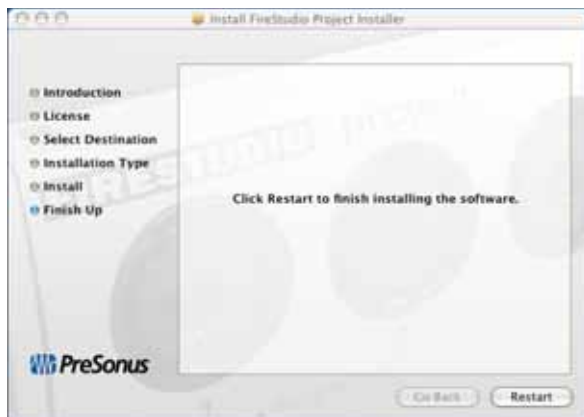
OPERATION

2.1.2 Installation in Mac OS X

After inserting the Installation CD into your disc drive, browse the disc and run the FireStudio Project installer, which will take you through each step of the installation process.



- 1) The FireStudio Project Installer was written to be as simple and easy-to-follow as possible. Please read each message carefully to ensure the FireStudio Project is properly installed.



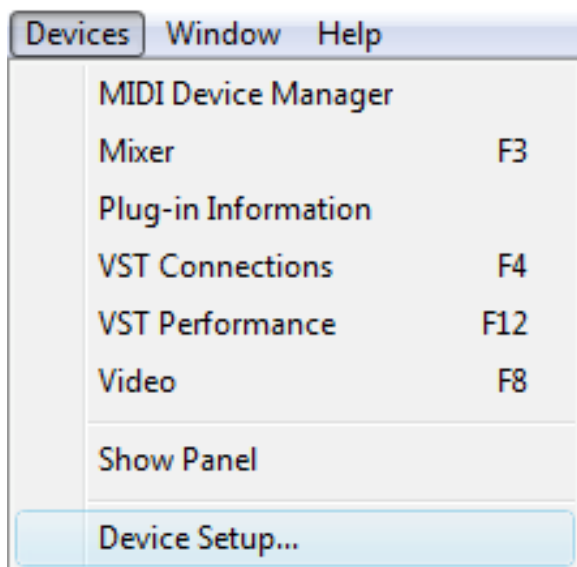
- 2) After rebooting your computer, connect your FireStudio Project to your computer via the included FireWire cable. When the sync light remains solid blue, your FireStudio Project is synced to your computer and ready to use!

OPERATION

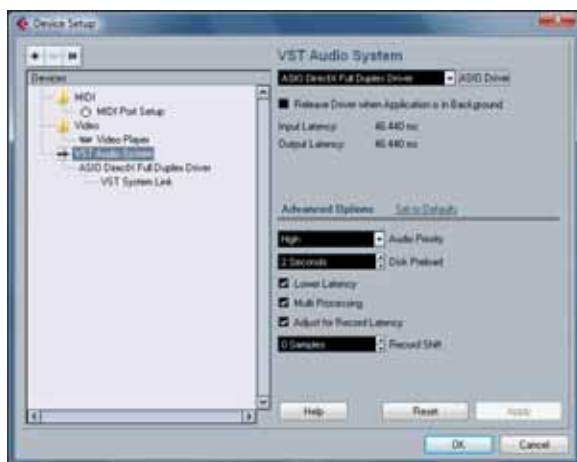
2.1.3 Cubase LE 4 – Device Setup

Once you have installed the FireStudio Project drivers and connected your FireStudio Project, you can use the Cubase LE 4 Music Creation and Production System software included with your FireStudio Project to begin recording, mixing and producing your music. Insert the Cubase LE 4 installation CD into your computer and run the installer.

Then, launch Cubase LE 4 and follow these steps to begin recording with your FireStudio Project:

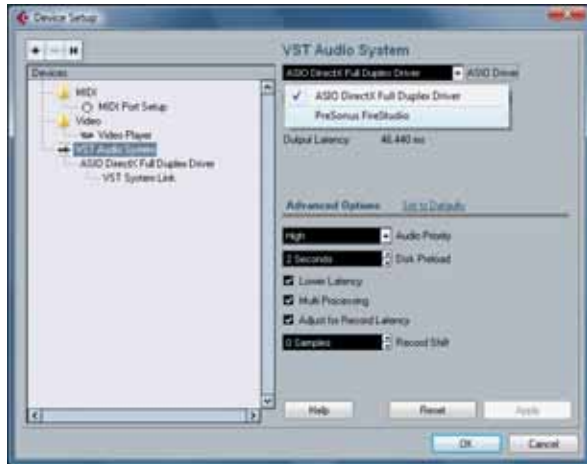


- 1) Select 'Device Setup...' from the *Devices* menu.

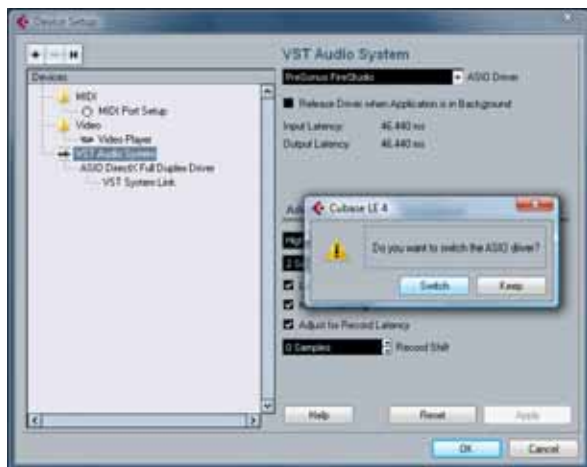


- 2) Select 'VST Audio System' from the *Devices* column in Device Setup.

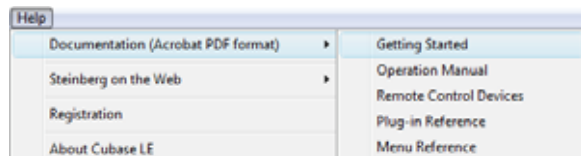
OPERATION



- 3) Select 'PreSonus FireStudio' from the *ASIO Driver* dropdown list.



- 4) Click 'Switch' to begin using the FireStudio Project Driver.



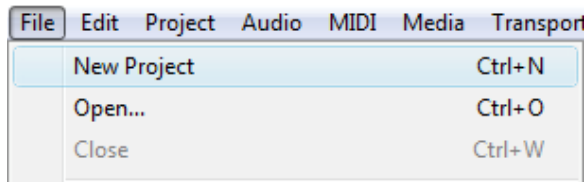
For more help on using Cubase LE 4, please read the *Getting Started* and *Operation Manual* help documents located in Help > Documentation.

OPERATION

2.1.4 Cubase LE 4 – Creating a Project

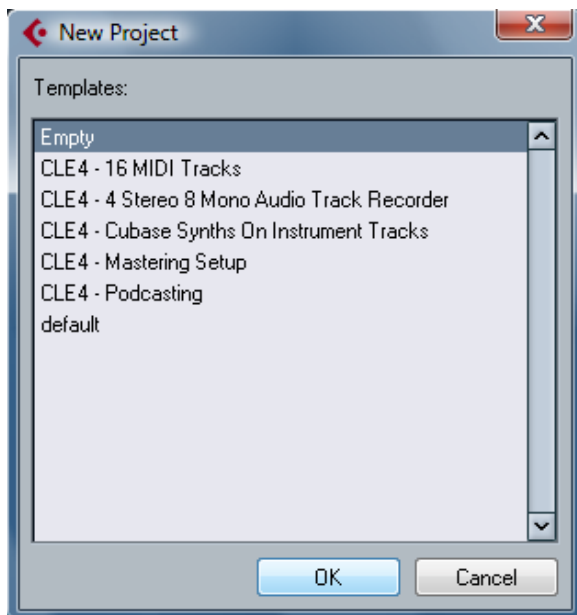
To begin recording in Cubase LE, you first need to create a project. Once you have the project environment, you can begin adding audio and MIDI tracks to record and edit on. Follow these simple steps to begin recording your first audio in Cubase LE:

- 1) Plug an XLR microphone or instrument into FireStudio Project channel one and turn on 48V phantom power if needed for your microphone (typically only for condenser microphones.)



- 2) Enter the *File* menu and select 'New Project'.

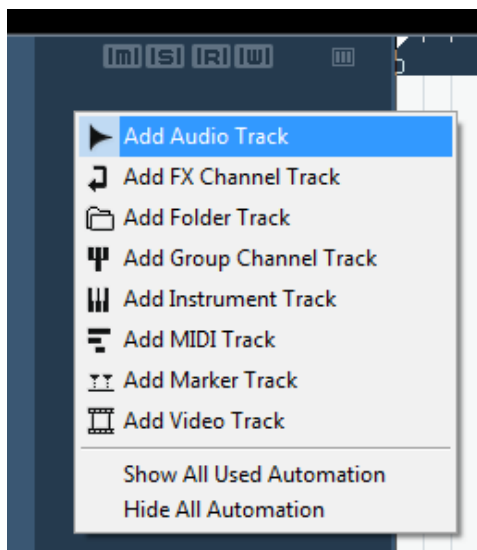
You can also use the keyboard shortcut Ctrl+N.



- 3) Select 'Empty' when prompted for a Template.

Click 'OK'.

OPERATION



- 4) Right-click in the track space within the new project and select 'Add Audio Track' from the dropdown menu which appears.

You can also add a track by entering the Project menu and selecting 'Add Track'.

- 5) When the Add Audio Track dialogue appears, choose the number of Audio Tracks you wish to add, whether they will be Mono or Stereo and then click 'OK'.

If you have two audio signals making up a stereo pair (i.e. keyboard, FX processor, cd player, etc.), you should use a Stereo Configuration.

Otherwise, if you have a single, mono audio source (i.e. microphone or instrument), you will want to choose a Mono Configuration.



- 6) Click the Record Enable button to arm the new track for recording.

- 7) Click the Monitor button to hear the input through the FireStudio Project's 1/2 and Main CR outputs.

- 8) Select FireStudio Project input 'Stereo In > Left'.

When choosing a mono from a stereo pair, the "left" channel is typically the odd-numbered channel, and the "right" channel is typically the even-numbered channel (i.e. Left is 1; Right is 2).

Press <F4> on your keyboard to enter the VST Connections menu for more details on your specific input and output routing.

- 9) Turn up the gain control knob on the front panel of the FireStudio Project for channel 1 while speaking/singing into the microphone or playing your instrument. You should see the input meter in Cubase LE react to the input. Adjust the gain so the input level is near its maximum **without clipping**.

- 10) Connect a set of headphones to the FireStudio Project headphone output. You may also wish to connect monitors to the FireStudio Project's Main Outs.

- 11) You are now ready to record.

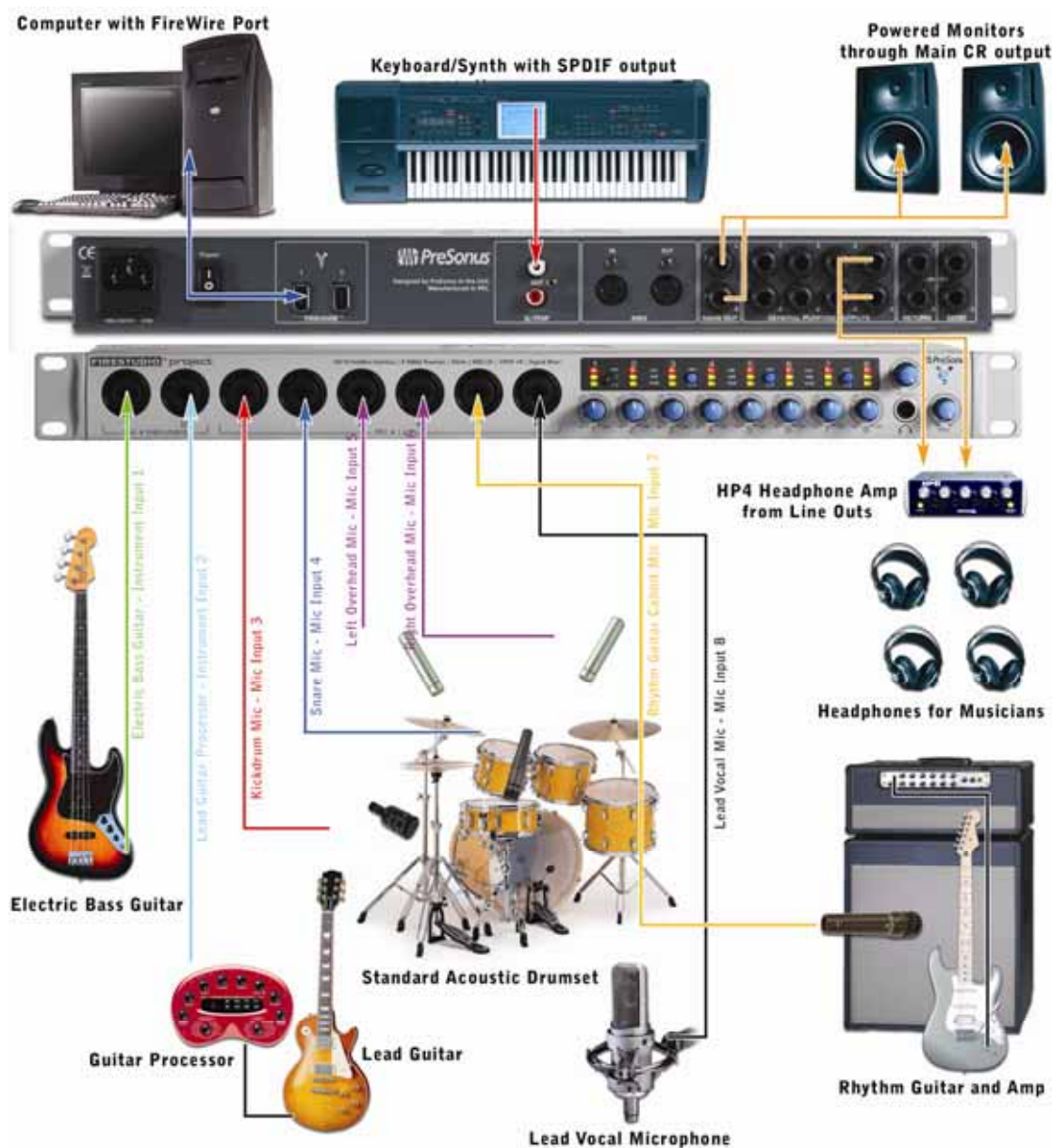
Cubase LE help is available by pressing <F1> on your keyboard or online by visiting www.steinberg.net.

OPERATION

2.2 SAMPLE HOOK UP DIAGRAM

With the FireStudio Project, you can simultaneously record and play back up to 10 channels. Since it is loaded with eight preamplifiers, you can plug in eight microphones to the FireStudio Project along with S/PDIF digital input to record a full band. This makes recording extremely easy. All you need are a few microphones, some cables to connect them, a musician (or two or three or more) and the creative energy to bring it all together.

This is a typical rock band setup. Your needs may vary depending upon the number and variety of sources you are recording. Feel free to adapt the sample setup below to your precise needs.



note: all photos are property of their respected owners.

OPERATION

2.3 MICROPHONES

The FireStudio Project works with many microphones including dynamic, ribbon and condenser microphones.

2.3.1 Condenser

Condenser microphones tend to generate a high-quality audio signal and are one of the most popular mic choices for today's studio recording applications. Because of their design technology, condenser microphones require a power source, which can be provided from a small battery, external power supply or from microphone inputs as *phantom power*. The FireStudio Project sends phantom power over XLR inputs only.

2.3.2 Dynamic

Dynamic microphones are possibly the most widely used microphone type – especially in live shows. They are relatively inexpensive, resistant to physical damage and typically handle high sound pressure levels (SPL) very well. Unlike condenser microphones, dynamic microphones do not require a power source and, in most cases, has no effect on a dynamic microphone's audio quality or sensitivity.

Dynamic microphones, especially ribbon microphones, tend to generate low output voltages, so they typically need more preamp gain than a condenser microphone.

Ribbon

Ribbon microphones are a special type of dynamic microphone and get their name from the thin metal ribbon used in their design. Ribbon microphones have very high quality sound reproduction qualities – especially higher frequencies sounds. However, they are very fragile and typically cannot handle high SPL's.

The most important thing to note about Ribbon microphones is that nearly all ***Ribbon Microphones do NOT require phantom power***. In fact, unless a Ribbon microphone specifically calls for phantom power, sending phantom power to a ribbon microphone will destroy it – usually beyond repair.

2.3.3 USB and other types

There are a vast number of microphone types available, and as technology increases, it is very likely more will surface. One type of microphone to emerge recently is the USB microphone. Most USB microphones have their own built-in preamp and use drivers separate from the FireStudio Project drivers.

If you are using a new or non-standard type of microphone (i.e., USB, headset, laser, MEMS, etc.), please consult your microphone's user's manual for power requirement or compatibility information.

Regardless of the microphone type you are using, we recommend reading your microphone's user's manual thoroughly before engaging phantom power or if any other usage questions may arise.

OPERATION

2.4 USING THE PREAMP OUTPUT AND LINE INPUT AS AN INSERT

The FireStudio Project features ¼" TRS balanced *Send* and *Return* jacks on Channels 1 and 2. These jacks are labeled as Preamp Output (Send) and Line Input (Return). These connectors allow the use of external processors such as compressors, limiters, EQ's, de-essers, etc. Simply connect the Preamp Output jack to the line input of your external processor. Then connect the line output of the external processor to the Line Input 1 or 2 of the FireStudio Project. The input signal from channel 1 and/or 2 is now routed out of the FireStudio Project into the external processor and back into the FireStudio Project. The final, processed signal can now be recorded using channel 1 or 2.

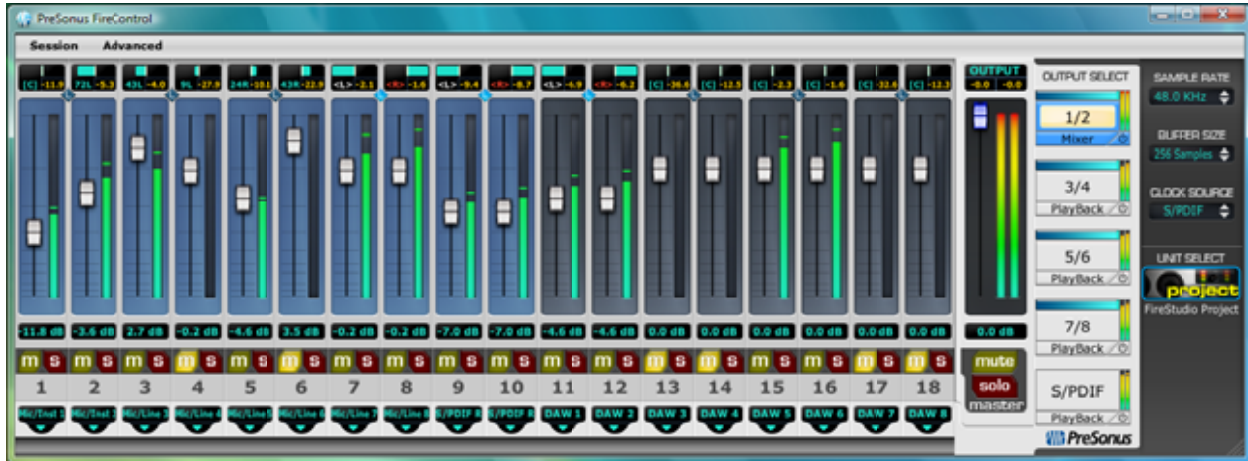
NOTES:

The line inputs on channels 1 and 2 are normalled to the channel 1 & 2 preamp outputs, so take precedence over the corresponding combination Mic/Instrument input on the front of the FireStudio Project. (I.E., if a cable is plugged into channel one line input on the rear of the FireStudio Project, the channel one Mic/Instrument input will be inactive until the cable is removed from line input one.)

The Preamp Outputs are not connected to the DAC (digital to analogue converters) in any way and so are only capable of routing the input signals from channels 1 & 2. If you need to route recorded audio or input from channels 3-8, you will need to use your recording software and one or more of the Line Outputs.

CONTROLS AND CONNECTIONS

3.1 PRESONUS FIRECONTROL SOFTWARE



The FireControl is a powerful, flexible and easy to use solution for creating multiple mixes from your inputs and DAW playback streams with zero latency. It allows you to create a zero-latency mix with up to 18 of your input and output signals for each of your FireStudio Project's output pairs.

The FireControl also acts as the FireStudio Project's control panel with the ability to change various hardware and software settings of the FireStudio Project hardware and drivers.

The Mixer section of the FireControl was designed to look and 'feel' like a hardware mixer, so most of the features may already be familiar to you. The following section describes in detail the FireControl layout and the functions of the various buttons found in the FireControl.

3.1.1 FireControl Application Icon



Once you have successfully installed your FireStudio Project, the FireControl will be available from the Notification Area of your taskbar (typically at the bottom right corner of your screen near the clock).

The FireControl icon is red when your FireStudio Project is disconnected or not installed and blue when the FireStudio Project is connected and properly installed.

Open the FireControl by double-clicking the blue FireControl icon or by right-clicking the icon and selecting "Open PreSonus FireControl".

Right-click the FireControl icon and select "Quit" to completely exit the FireControl application and remove it from your Taskbar.

Mac OS X users will find the FireControl application in the Applications folder.

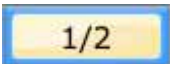




CONTROLS AND CONNECTIONS


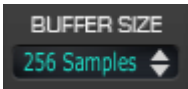


3.1.2 FireControl Master Section

The Master Section is always visible and gives you control over the FireStudio Project's outputs' source and level as well as the Sample Rate and Buffer Size of the FireStudio drivers.

Output Select Section

<ul style="list-style-type: none"><u>Output Select Buttons</u> 	<p>Changes the Output Mixer displayed</p> <p>The FireControl has five output mixes – one for each of the FireStudio Project's five outputs.</p>
<ul style="list-style-type: none"><u>Mixer Toggle Buttons</u> 	<p>Enables or disables the associated Output's mixer</p> <p>When set to 'PlayBack', the output pair's DAW playback outputs are routed directly to it.</p>
<ul style="list-style-type: none"><u>Post Fader Output Meters</u> 	<p>Displays the output level of each stereo pair</p> <p>These meter post fader levels, which means they represent the actual audio output levels of your FireStudio Project.</p>

Hardware Settings Section

<ul style="list-style-type: none"><u>Sample Rate Selector</u> 	<p>Changes FireStudio Project Sample Rate</p> <p>A Higher Sample Rate increases frequency range and sonic accuracy but also increases recorded audio file sizes.</p>
<ul style="list-style-type: none"><u>Buffer Size Selector</u> 	<p>Changes the FireStudio Project Buffer Size <i>This selector is not present in Mac OS X.</i></p> <p>A large buffer increases latency but is more stable.</p>
<ul style="list-style-type: none"><u>Clock Source Selector</u> 	<p>Changes the FireStudio Project Clock Source</p> <p>The 'S/PDIF' option is used to slave the FireStudio Project to an external device via S/PDIF.</p>
<ul style="list-style-type: none"><u>Resizing Corner</u> 	<p>Resizes the width of the FireControl</p> <p>Click and drag the bottom right corner of the FireControl to resize its width on your screen and increase / decrease the number of channels visible in the Mixer.</p>

CONTROLS AND CONNECTIONS

Master Output Section

- Master Output Fader



Changes the selected output's audio level

Move the Master Fader up and down to increase and decrease the level of the selected output's audio.

The dB value of boost or attenuation is displayed below the Channel Fader from -infinity to 0.0 dB.

Two virtual LED meters to the right of the Master Fader display the pre fader levels of the audio signal.

The peak value in dBFS of the channel's audio is displayed directly above the Master Output's virtual LED meter.

NOTE: If the peak values display "CLIP", then your Mixer channels and/or your DAW playback levels should be reduced. The clip indicators clear when the mouse pointer hovers over them.

- Master Mute and Solo Clear



Clears all active channel Mutes or Solos

The Master Mute and Solo clear buttons are only active when a channel's mute or solo button is active.







3.1.3 FireControl Mixer

The FireControl Mixer allows you to create a customized mix of up to 18 of the FireStudio Project's hardware inputs and software playback outputs and adjust their levels independently for each of the FireStudio Project's stereo output pairs with zero latency. The Mixer section is only visible if the selected output pair's Mixer Toggle is on.

NOTE: The Mixer is common to all of the FireStudio Project's outputs, so if you add or remove a channel from the Mixer, every output with the Mixer Toggle on will be affected by the change.

CONTROLS AND CONNECTIONS

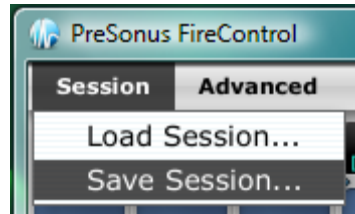
These are the individual elements of the Mixer and their functions:

<ul style="list-style-type: none"><u>Channel Pan Sliders</u>	Moves the channel's audio left/right in the stereo field Double-clicking the slider returns the pan to center.
	
<ul style="list-style-type: none"><u>Link Buttons</u>	Links the adjacent channels as a stereo pair When channels are linked, changing either channel's level changes both, and pan states are hard left/right.
	
<ul style="list-style-type: none"><u>Channel Faders</u>	Changes the channel's audio level Move the Channel Fader up and down to increase and decrease the channel's audio level. The dB value of boost or attenuation is displayed below the Channel Fader from -infinity to +6 dB. A virtual LED meter to the right of each fader displays the post fader level of the channel's audio. The peak value in dBFS of the channel's audio is displayed directly above each channel's virtual LED meter.
	
<ul style="list-style-type: none"><u>Channel Mutes and Solos</u>	Adds the channel to the Mute or Solo bus Muting a channel silences the channel's audio. Soloing a channel mutes all other non-soloed channels.
	
<ul style="list-style-type: none"><u>Channel Scroll Bar</u>	Changes the visible channels if the FireStudio is resized When the FireControl is resized to show less than 18 channels, click in the scroll bar area to slide the channels left and right and view the hidden channels.
	
<ul style="list-style-type: none"><u>Input Selectors</u>	Changes the source of the FireControl Mixer channels Choosing "No Input" will hide the channel. "Inputs" are your hardware inputs (Mic/Inst/Line/SPDIF). "PlayBack" are your software DAW PlayBack outputs.
	

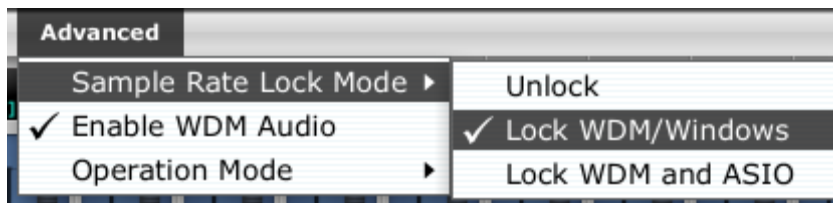
CONTROLS AND CONNECTIONS

3.1.4 FireControl Menus

- **Session.** Allows you to Save and Load the FireControl Mixer and Output settings



- ***Load Session...*** Loads a saved FireControl session file
 - ***Save Session...*** Saves the FireControl Mixer and Output settings for loading later
- **Advanced.** Gives additional options specific to Windows functionality.



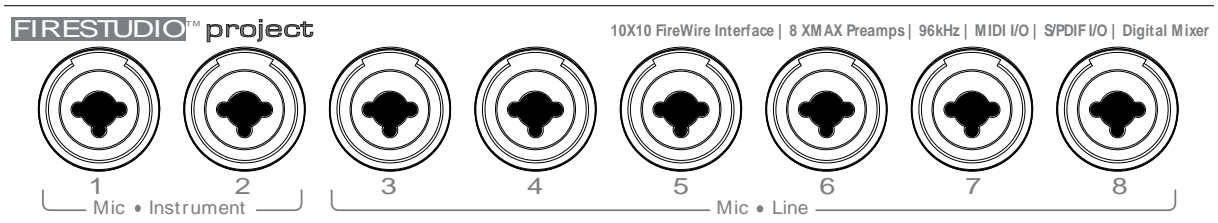
- ***Sample Rate Lock Mode.*** Sets which types of applications can change the Sample Rate.
 - ***Unlock.*** Any WDM or ASIO application can change the Sample Rate.
 - ***Lock WDM/Windows.*** Only ASIO applications can change the Sample Rate.
 - ***Lock WDM and ASIO.*** Only the FireControl can change the Sample Rate.
 - ***Enable WDM Audio.*** Unchecking this disables WDM audio in Windows. Disabling WDM Audio is useful when the FireStudio Project is dedicated for DAW use only.



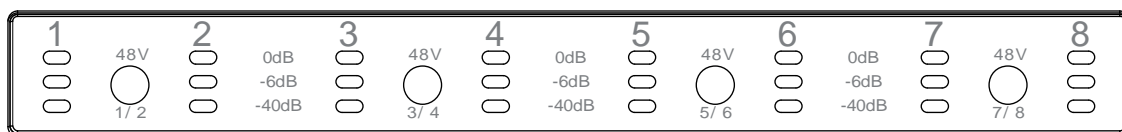
- ***Operation Mode.*** Changes how the FireStudio drivers output buffer size is set.
 - ***Normal Mode.*** Input and Output buffers are both identical to the Buffer Size.
 - ***Safe Mode 1-3.*** Increases the output buffer size for added stability.

CONTROLS AND CONNECTIONS

3.2 FRONT PANEL LAYOUT

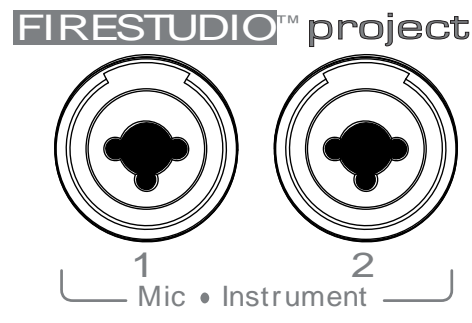


- **Microphone Pre-Amplifier.** Your FireStudio Project is equipped with eight custom designed PreSonus X-MAX microphone preamplifiers for use with all types of microphones including Dynamics, Condensers and Ribbons as well as instruments and line level signals. The award winning PreSonus preamplifier design is a Class A input buffer followed by a dual servo gain stage. This arrangement results in ultra low noise and wide gain control allowing the FireStudio Project user to boost desirable signal without increasing unwanted background noise.



- **48 Volt Phantom Power.** The FireStudio Project has 48V Phantom power available in groups of two via push button switches on the front panel. From left to right, each button activates Phantom power for channels 1&2, 3&4, 5&6 and 7&8.
 - XLR connector wiring for Phantom Power
 - Pin 1 = GND
 - Pin 2 = +48V
 - Pin 3 = +48V
- **+22dBu Headroom.** The FireStudio Project microphone preamplifier has +22 dBu headroom. This feature gives you wide dynamic range and excellent transient response characteristics.
- **Neutrik Combo Connectors.** Each channel of the FireStudio Project has a Mic/Line connector using the Neutrik Combo connector. This revolutionary style connector lets you use either 1/4" phone or XLR connectors in the same female input. The first two channels of the FireStudio Project are 1/4" instrument and microphone XLR inputs. The line level inputs for these two channels are on the back panel of the FireStudio Project.

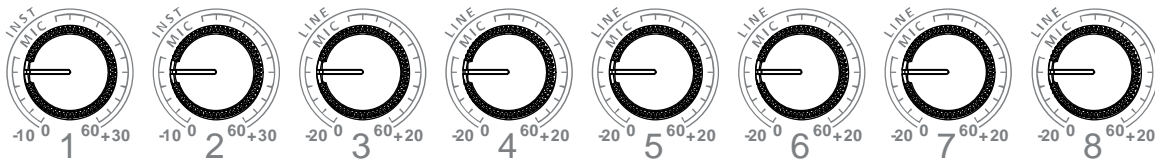
CONTROLS AND CONNECTIONS



- **Instrument Inputs (Channels 1 and 2).** The ¼" TS connector on channels 1 and 2 are for use with an instrument (guitar, bass, etc.). When an instrument is plugged into the instrument input, the microphone preamp is bypassed, and the FireStudio Project becomes an active instrument preamplifier.

NOTE: Active instruments are those that have an internal preamp or a line level output. Active instruments should be plugged into a line input rather than into an instrument input. Plugging a line level source into the instrument inputs on the front of the FireStudio Project not only risks damage to these inputs but also results in a very loud and often distorted audio signal.

(In other words, don't plug a line level source into the combo jacks of channel 1 or 2.)

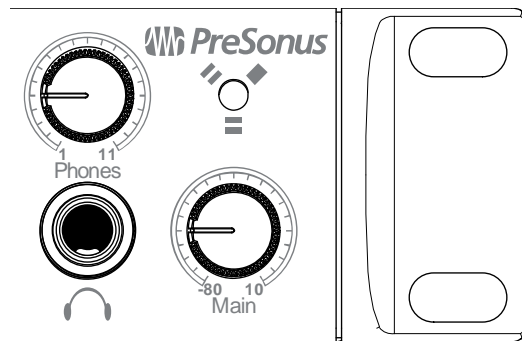


- **Input Gain/Trim Control.** These knobs provide the following gain structure:
 - **XLR Microphone Inputs.** 54 dB of variable gain (-4 dB to +50 dB)
 - **TS ¼" Instrument/Hi-Z Inputs.** 54 dB of variable gain (-4 dB to +50 dB)
 - **TRS ¼" Line Inputs.** 32 dB of variable gain (-16 dB to +16 dB trim adjustment)

1	48V	2	0dB	3	48V	4	0dB	5	48V	6	0dB	7	48V	8
○	○	○	-6dB	○	○	○	-6dB	○	○	○	-6dB	○	○	○
○	○	○	-40dB	○	○	○	-40dB	○	○	○	-40dB	○	○	○
1 / 2				3 / 4				5 / 6				7 / 8		

- **LED Meters / Clip Indicator.** Each channel features three LED level indicators. The green LED will light up when your input signal from the XLR (Mic) or ¼" (line) reaches -40 dBFS. The yellow LED will light up when the channel's input signal reaches -6 dBFS (+4 dBu). The red clip indicator LED will illuminate when the channel's input signal reaches 0 dBFS. At this level, your mic preamp/line trim signal will exhibit signs of clipping such as distortion. It is highly recommended you do not allow your converters to clip (the red clip indicators to light up) as the sound quality will not be desirable.

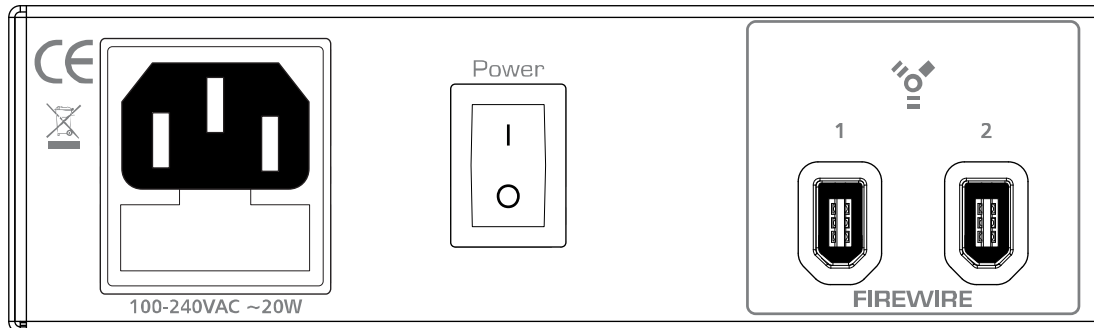
CONTROLS AND CONNECTIONS



- **Main.** The Main knob controls the output level for the Main Outputs on the back of the FireStudio Project with a range of -80 db to +10 dB.
- **Phones.** The Phones knob controls the amount of volume going to the headphone output on the front of the unit. Notice the volume indicator goes to 11 ... use this setting with extreme caution.
- **1/4" Headphone Jack.** This is where you connect your headphones to the FireStudio Project.
- **Red-Blue Power/Sync Light.** This light is a clock source (sync) indicator. It lets you know if your unit is receiving word clock correctly. Word clock is the manner by which digital devices sync frame rates. Proper word clock sync prevents digital devices from having pops, clicks or distortion in the audio signal due to mismatched digital audio transmission.
 - ***Blue.*** FireStudio Project is correctly synced via FireWire or S/PDIF
 - ***Flashing Red and Blue.*** Sync invalid or not present

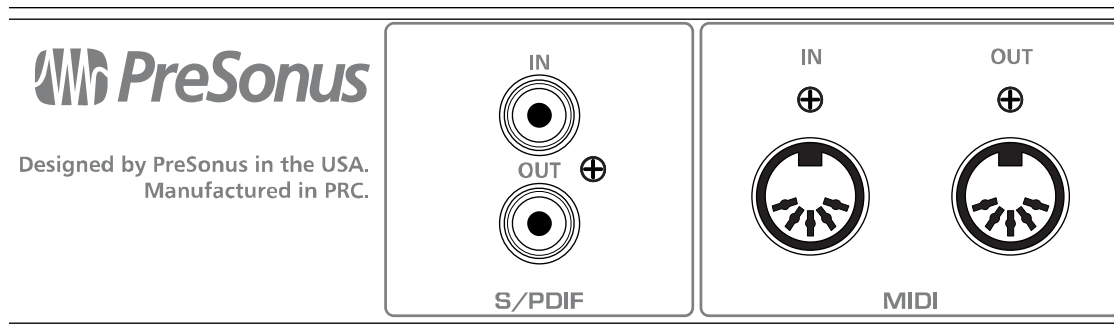
CONTROLS AND CONNECTIONS

3.3 BACK PANEL LAYOUT



- **Power Adaptor Input.** This is where you plug the provide IEC power cable into the FireStudio Project.
- **Power Switch.** Push the top part of the switch to turn your FireStudio Project on (|). Push the bottom part of the switch to turn your FireStudio Project off (O).
- **FireWire Ports.** There are two standard 6-pin FireWire ports on the back of the FireStudio Project. Either (and only one) should be used to connect your FireStudio Project to a vacant FireWire port on your computer. If your computer has a 4-pin connector (commonly found on laptops), you will need a 4 to 6-pin connector to connect your FireStudio Project to your computer.

Use the 'extra' FireWire port to connect additional FireWire devices in such as external Hard Drives.



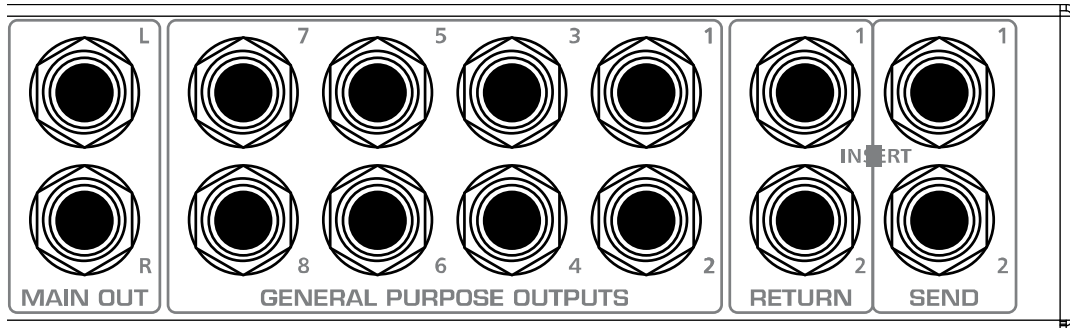
- **S/PDIF In and Out Jacks.** These allow the FireStudio Project to receive and transmit audio from other digital audio devices. The S/PDIF standard allows two channels of audio to be transmitted at rates up to 24bit/96kHz. The S/PDIF input also allows the FireStudio Project to receive Word Clock – the synchronizing signal indicating the sampling frequency or rate of sample words over a digital interface.

You should select 'S/PDIF' as the Clock Source in the FireControl when using the S/PDIF input.

- **MIDI In and Out Ports.** MIDI stands for "Musical Instrument Digital Interface". However, the MIDI standard goes well beyond just instrumentation and sequencing. The MIDI inputs and outputs allow connection and/or communication with external MIDI equipment. One function of this port is MIDI programming. These can also be used for MMC (MIDI Machine Control) and MTC (MIDI Time Code).

CONTROLS AND CONNECTIONS

NOTE: *MIDI is not audio but is frequently used to trigger or control an audio source (such as a VST plugin or synthesizer). When using MIDI, ensure your MIDI data is correctly sent and received by the appropriate hardware or software instruments. You may also need to return those devices' audio to the FireStudio Project. Please consult the User's Manual of your MIDI devices for help with MIDI setup and usage.*



- **Main Output.** The audio source for the Main Outs is identical to that of General Purpose outputs 1 & 2 (DAW Playback 1 & 2 by default). The difference is that the output level of the Main Outputs is controlled by the FireStudio Project Main volume knob on the front of the unit.
- **General Purpose Line Outputs (TRS Balanced).** These are general purpose line-level outputs. Line Outputs 1 & 2 are typically your computer's audio playback. All eight Line Outputs can be accessed by your computer and can be used for separate mixes, additional speakers, external effects processors, etc.

NOTE: By default, the General Purpose Outputs are DAW Playback 1-8 streams from your computer. However, the FireControl has final control over their audio sources.

- **Line Inputs.** These are the line-level inputs for channels 1 & 2. Their gain structure is identical to the 1/4" inputs for channels 3-8 and are typically used for signals not requiring preamplification (like CD/MP3 players, effects processors, etc.) These inputs are normalled to the channel 1 & 2 preamp outputs so take precedence over the corresponding Mic/Instrument input on the front of the FireStudio Project. (I.E., if a cable is plugged into channel one line input on the rear of the FireStudio Project, the channel one Mic/Instrument input will be inactive until the cable is removed from line input one.)
- **Preamp Outputs.** These 1/4" jacks are balanced outputs of the preamps on channels 1 & 2. They are half-normalled to the line inputs 1 & 2, so plugging a cable into either of the preamp outputs does not interrupt the signal flow from the preamp outputs to the line inputs (and to the ADC).

NOTE: The Preamp Outputs are typically used for patching in external signal processors such as compressors, limiters, EQ's, de-essers, etc. to the audio signals on channels 1 or 2. These Preamp Outputs are not connected to the DAC (digital to analogue converters) in any way and so are only capable of routing the input signals from channels 1 & 2. If you need to route recorded audio or input from channels 3-8, you will need to use your recording software and one or more of the Line Outputs.

TECHNICAL INFORMATION

4.1 TROUBLESHOOTING

Please note that many technical issues can arise when converting a standard computer into a DAW (Digital Audio Workstation). PreSonus will only provide support for issues that directly relate to the FireStudio Project interface. It may be necessary to contact the manufacturer of the computer, operating system and/or software to obtain additional technical support. PreSonus does not provide support for issues in regards to operating systems, additional hardware or software. Please check our website, www.PreSonus.com regularly for software information and updates, firmware updates and technical support. Technical assistance may also be received by calling PreSonus at 225-216-7887 between the hours of 10 am and 5 PM Central Time.

Pops and Clicks

Pops and clicks in either your Input or Playback audio are typically caused by momentary losses of synchronization between the FireStudio Project and its clock source. This can be due to a FireWire card not suited for FireWire audio devices or to a lack of CPU power or available memory. Try closing all unnecessary programs, increasing the Buffer Size in the FireControl and optimizing your operating system for audio.

Pops and clicks exclusive to the S/PDIF input or output are typically caused when the FireStudio Project is not digitally synced to the external S/PDIF device. If this is the case, ensure your FireStudio Project and external S/PDIF device are properly synced. *Please consult your S/PDIF device's User's Manual for more details on syncing it to your FireStudio Project.*

Flashing Sync Light

The FireStudio Project's Sync light flashes red and blue when it is not synced. Check the FireWire cable to ensure it hasn't become disconnected. If you are using an external S/PDIF device and your Clock Source is set to "S/PDIF", set the FireControl's Sample Rate to the same Sample Rate as that of your S/PDIF device. If you are not using an external S/PDIF device, open the FireControl and set the Clock Source to "Internal".

Audio Drop Outs

Audio drop outs can occur when the speed of your processor cannot buffer audio fast enough. Increase your Buffer Size in the FireControl and try the different Operation Modes from the Advanced menu.

Preamplifier

Q: I have a microphone plugged into channel one (or two) but I am not getting any signal.

Possible Solutions:

- 1) Check your mic cable. This should typically be an XLR connection.
- 2) Make sure the microphone does not require phantom power. If it does, press the 48V button.
- 3) Make sure nothing is plugged into the line input on the rear of the FireStudio Project. The line inputs on channels 1 and 2 take precedence over the combo input on the front of the unit for channels 1 and 2. If a cable is plugged into the line input on channel, then the mic/instrument input on channel one will be inactive until the cable is removed from line input 1.

For help with Cubase LE 4, press F1 while running Cubase LE or visit: www.steinberg.net.

TECHNICAL INFORMATION

4.2 SPECIFICATIONS

Microphone Preamp

Type	XLR Female Balanced
Frequency Response (± 0.5 dB)	20 Hz to 50 kHz
Frequency Response (± 3.0 dB)	20 Hz to 150 kHz
Input Impedance (Balanced)	1600 Ω
THD+N (unwtd, 1 kHz @ +4 dBu Output, Unity Gain)	< 0.003%
EIN (unwtd, 55dB Gain, 150 Ω Input, 20Hz to 22 kHz)	-126 dBu
S/N Ratio (Unity Gain, unwtd, Ref. = +4 dBu, 20Hz to 22 kHz)	> 101 dB
Common Mode Rejection Ratio (1 kHz, 55 dB Gain)	> 55 dB
Gain Control Range (± 1 dB)	-4 dB to 50 dB
Maximum Input Level (Unity Gain, 1 kHz @ 0.5% THD+N)	+14 dBu
Signal Level LEDs	
Red / Clip (± 0.5 dBu)	+10 dBu (0 dBFS)
Yellow (± 0.5 dBu)	+4 dBu (-6 dBFS)
Green (± 0.5 dBu)	-30 dBu (-40 dBFS)
Phantom Power (± 2 VDC)	+48 VDC

Instrument Input (channels 1 & 2 only)

Type	¼" TRS Female Unbalanced
Input Impedance	1 M Ω

Line Inputs

Type	¼" TRS Female Balanced
Frequency Response (± 0.5 dB)	20 Hz to 50 kHz
Frequency Response (± 3.0 dB)	20 Hz to 150 kHz
Input Impedance (Balanced)	10 K Ω
THD+N (unwtd, 1 kHz @ +4 dBu Output, Unity Gain)	< 0.003%
S/N Ratio (Unity Gain, unwtd, Ref. = +4 dBu, 20 Hz to 22 kHz)	> 101 dB
Gain Control Range (± 1 dB)	-16 dB to +16 dB
Maximum Input Level (Unity Gain, 1 kHz @ 0.5% THD+N)	+10 dBu
Maximum Input Level (Minimum Gain, 1 kHz @ 0.5% THD+N)	+22 dBu

TECHNICAL INFORMATION

Line Outputs (including Preamp Output, General Purpose Outputs and Main Outputs)

Type ¼" TRS Balanced
Output Impedance 51 Ω

Headphone Output

Type ¼" TRS Active Stereo
Maximum Output 150 mW/Ch @ 60 Ω Load
Frequency Response (± 1.0 dB) 10 Hz – 70 kHz

Digital Audio

ADC Dynamic Range (Awtd, 48 kHz Sample Rate) 114 dB
DAC Dynamic Range (Awtd, 48 kHz Sample Rate) 114 dB
Bit Depth 24
Reference Level for 0dBFS +10 dBu
Internal Sample Frequency Selections (kHz) 44.1, 48, 88.2, 96
External Sample Frequency Input S/PDIF

Power

Input Connector Type IEC
Input Voltage Range 90 to 230 VAC
Power Requirements (Continuous) 20W

As a commitment to constant improvement, PreSonus Audio Electronics, Inc. reserves the right to change any specification stated herein at any time without notification.